IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:		Examiner: Peter D. NOLAN
	Falk HECKER et al.	
For:	METHOD AND DEVICE FOR EFFECTING A COMPUTER-AIDED ESTIMATION OF THE MASS OF A VEHICLE, PARTICULARLY OF A COMMERCIAL VEHICLE	
Filed:	February 27, 2006	Art Unit: 4155
Serial No.:	**10/546,625**	

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF PURSUANT TO 37 C.F.R. § 41.37

SIR:

In the above-identified patent application ("the present application"), Appellants filed a Notice Of Appeal on September 10, 2009 from the Final Office Action issued by the U.S. Patent and Trademark Office on June 10, 2009, so that the two-month appeal brief due date is November 10, 2009.

In the Final Office Action, claims 13 to 30 were finally rejected. A Response After a Final Office Action was mailed on July 27, 2009, and an Advisory Action was mailed on August 20, 2009.

It is understood for purposes of the appeal that any Amendments to date have already been entered by the Examiner, and that the Response After Final does not require entry since it included no amendments.

As to the length of the "concise explanation" of the subject matter defined in each of the claims involved in the appeal (see 41.37), the "concise explanation" language is like the "concise explanation" requirement of former Rule 37 C.F.R. § 1.192. Accordingly, the length of the concise explanation provided is acceptable, since it would have been acceptable under 37 C.F.R. § 1.192 and since it specifically defines the subject matter of the independent claims involved and in the appeal. In the filing of many appeal briefs under the old rule for the present Assignee, the length of the "concise explanation" has always been ultimately accepted by the Patent Office.

It is therefore respectfully submitted that this Appeal Brief complies with 37 C.F.R. § 41.37. Although no longer required by the rules, this Brief is submitted in triplicate as a courtesy to the Appeals Board.

It is respectfully submitted that the final rejections of claims 13 to 30 should be reversed for the reasons explained below.

1. REAL PARTY IN INTEREST

The real party in interest in the present appeal is KNORR-BREMSE SYSTEME FUER NUTZFAHRZEUGE GMBH ("KNORR-BREMSE") of Muenchen in the Federal Republic of Germany. KNORR-BREMSE is the assignee of the entire right, title and interest in the present application.

2. RELATED APPEALS AND INTERFERENCES

There are no interferences or other appeals related to the present application, which "will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal".

3. STATUS OF CLAIMS

CLAIMS 1 TO 12 ARE CANCELED.

A. Claims 13 to 17, 21, 22, 24 and 25 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,347,269 to Hayakawa et al. in view of U.S. Patent No. 4,773,013 to Crapanzano et al.

B. Claims 18 to 20, 26, 27 and 29 were rejected under 35 U.S.C. § 103(a) as unpatentable over Hayakawa in view of Crapanzano and further in view of U.S. Patent No. 6,1647,357 to Zhu et al.

C. Claim 23 was rejected under 35 U.S.C. § 103(a) as unpatentable over Hayakawa in view of Crapanzano et al. and further in view of U.S. Patent No. 6,745,112 to Mori, "Floating-Point Computation Using a Microcontroller" by Randel et al., "Programming and Customizing the PIC Microcontroller" by Predko and U.S. Patent No. 6,567,734 to Bellinger et al.

D. Claims 28 and 30 were rejected under 35 U.S.C. § 103(a) as unpatentable over Hayakawa in view of Crapanzano et al. and further in view of U.S. Patent No. 6,745,112 to Mori, "Floating-Point Computation Using a Microcontroller" by Randel et al., and "Programming and Customizing the PIC Microcontroller" by Predko.

Appellants therefore appeal from the final rejections of pending claims 13 to 30. A copy of all of the pending and appealed claims 13 to 30 is attached hereto in the Claims Appendix.

4. STATUS OF AMENDMENTS

In response to the Final Office Action mailed on June 10, 2009, Appellants filed a Response After A Final Office Action (with no amendments), which was mailed on July 27, 2009.

It is understood for purposes of the appeal that any Amendments to date have already been entered by the Examiner, and that the Response After Final does not require entry since it included no amendments.

5. SUMMARY OF CLAIMED SUBJECT MATTER

The concise explanation of the summary of the claimed subject matter is as follows, as described in the context of the present application.

As to claim 13, it is to a method for effecting a computer-aided estimation of a mass of a vehicle, including computer-aided differentiating an equilibrium relationship, between a motive force and a sum of an inertial force and drive resistances. In this regard, a method is described which is based on the equilibrium relationship or ratio between the motive or driving force on one hand, and the accelerative force and the climbing resistance. The equation is: $F = m \cdot (a + g \cdot \sin\alpha)$ (1)

where F = motive force, a = time derivation of the longitudinal vehicle velocity, α = gradient angle of the roadway, g = gravitational acceleration and m = vehicle mass.

In equation (1), the accelerative force is represented by the product m•a, and the climbing resistance by the product $m \cdot g \cdot \sin\alpha$. To calculate a mass m of the vehicle, equation (1) is solved for m, and the instantaneous values for F, where a and α are determined from measured quantities. (See specification, pg. 2, lines 13 to 29). When a vehicle is traveling along any route, gradient angle α of the roadway is a function of time t. If one differentiates equation (1) as to time t, the following equation results:

$\dot{F} = m \cdot (\dot{a} + g \cdot \dot{\alpha} \cdot \cos\alpha)$ (2) (See specification, pg. 3, lines 15 to 19).

As to claim 13, it also includes the feature in which the mass and a gradient angle of a roadway are included as quantities, with respect to time, assuming a constant gradient angle. Assuming the change in gradient angle α(t) is very small in time interval dt

considered, the influence of gradient angle α(t) may be minimized or eliminated. Then $\dot{\alpha} =$ dα/dt≈0 applies, and equation (2) reads as follows: $\dot{F} = m \cdot \dot{a}$ (3). (See specification, pg. 3, lines 21 to 25).

As to claim 13, it also includes the feature of calculating at least one of (a) the mass of the vehicle and (b) a reciprocal value of the mass of the vehicle from the equilibrium relationship differentiated with respect to time in the differentiating step. In this regard, Equation (3) (solved for estimated value $\hat{m}$) is:

$$\hat{m} = \frac{\dot{F}}{\dot{a}} \qquad (4)$$

Equation (4) thus forms the estimate equation for mass m of the vehicle. (See specification, pg. 3, line 33, to pg. 4, line 4). However, as explained in the specification, instead of calculating $\hat{m}$, it may be more favorable to calculate the reciprocal value $1/\hat{m}$. (See specification, pg. 6, lines 5 to 6).

As to claim 23, which depends from claim 13, it further includes the feature of forming a weighted average value, in which both the mass and a reciprocal value of the mass are calculated. In this regard, values for $\hat{m}$ and $1/\hat{m}$ may be calculated, and a weighted average value formed. (See specification, pg. 6, lines 7 to 8).

As to claim 24, it is to a device for effecting a computer-aided estimation of a mass of a vehicle, including a calculation unit to calculate at least one of (a) the mass of the vehicle and (b) a reciprocal value of the mass of the vehicle from an equilibrium relationship between a motive force and a sum of an inertial force and drive resistances. In this regard, The device may include a calculating unit for calculating the mass of the vehicle and/or the reciprocal value of the mass from the equilibrium relationship between motive force F and the running resistances. (See specification, pg. 6, lines 10 to 15).

As to claim 24, it also includes the feature in which the mass and a gradient angle of a roadway are included as calculation quantities, after a computer-aided differentiation of the equilibrium relationship with respect to time, assuming a constant gradient angle. In this regard, the specification discloses that the mass m and gradient angle α of the roadway are entered as calculation quantities, after a computer-aided differentiation of the equilibrium relationship with respect to time (assuming gradient angle α is constant). (See specification, pg. 6, lines 15 to 19).

In summary, the presently claimed subject matter is to a method for providing a computer-aided estimation of a mass of a vehicle, including computer-aided differentiating an equilibrium relationship, between a motive force and a sum of an inertial force and drive resistances, in which the mass and a gradient angle of a roadway are included as quantities, with respect to time, assuming a constant gradient angle; and calculating at least one of (a) the mass of the vehicle and (b) a reciprocal value of the mass of the vehicle from the equilibrium relationship differentiated with respect to time in the differentiating step. (See claim 13).

In further summary, the presently claimed subject matter also includes the feature of forming a weighted average value, in which both the mass and a reciprocal value of the mass are calculated. (See claim 23). Also, claim 23 depends from claim 13 and therefore includes all the features of claim 13, as described above. (See claim 13).

In further summary, the presently claimed subject matter is also to a device for providing a computer-aided estimation of a mass of a vehicle, including a calculation unit to calculate at least one of (a) the mass of the vehicle and (b) a reciprocal value of the mass of the vehicle from an equilibrium relationship between a motive force and a sum of an inertial force and drive resistances, the mass and a gradient angle of a roadway included as calculation quantities, after a computer-aided differentiation of the equilibrium relationship with respect to time, assuming a constant gradient angle. (See claim 24).

Finally, the appealed claims include no means-plus-function language and no step-plus-function claims, so that 37 C.F.R. 41.37(v) is satisfied as to its specific requirements for such claims, since none are present here. Also, the present application does not contain any step-plus-function claims because the method claims in the present application are not "step plus function" claims because they do not recite "a step for", as required by the Federal Circuit and as stated in Section 2181 of the MPEP.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether claims 13 to 17, 21, 22, 24 and 25 under 35 U.S.C. § 103(a) are unpatentable over U.S. Patent No. 6,347,269 ("Hayakawa"), in view of U.S. Patent No. 4,773,013 ("Crapanzano").

B. Whether claims 18 to 20, 26, 27 and 29 under 35 U.S.C. § 103(a) are unpatentable over the "Hayakawa" reference in view of the "Crapanzano" reference and U.S. Patent No. 6,1647,357 ("Zhu").

C. Whether claim 23 under 35 U.S.C. § 103(a) is unpatentable over the "Hayakawa" reference in view of the "Crapanzano" reference and further in view of U.S. Patent No. 6,745,112 ("Mori"), "Floating-Point Computation Using a Microcontroller" ("Randel"), "Programming and Customizing the PIC Microcontroller" ("Predko") and U.S. Patent No. 6,567,734 ("Bellinger").

D. Whether claims 28 and 30 under 35 U.S.C. § 103(a) are unpatentable over the "Hayakawa" reference in view of the "Crapanzano" reference and further in view of the "Mori", "Randel" and "Predko" references.

7. ARGUMENT

A. THE OBVIOUSNESS REJECTIONS OF CLAIMS 13 TO 17, 21, 22, 24 & 25

Claims 13 to 17, 21, 22, 24 and 25 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,347,269 to Hayakawa et al. in view of U.S. Patent No. 4,773,013 to Crapanzano et al.

To reject a claim under 35 U.S.C. § 103(a), the Office bears the initial burden of presenting a *prima facie* case of obviousness. *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish *prima facie* obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must not be based on the application disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). As clearly indicated by the Supreme Court in the *KSR* decision, it is "important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art]

elements" in the manner claimed. *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007). In this regard, the Supreme Court further noted that "rejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.*, at 1396. Second, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim features. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

CLAIMS 13 TO 17, 21, 22, 24 & 25

As to claim 13, it is respectfully submitted that the applied references do not disclose nor suggest the feature of *an assumption of a constant gradient angle* when estimating the vehicle mass as a function of time, as provided for in the context of the claimed subject matter. The present Specification (at page 3, lines 15-31) specifically discloses in this regard that *when a vehicle is traveling along any route, gradient angle α of the roadway is a function of time t and if one assumes the change in gradient angle α(t) is very small in time interval dt considered, the influence of gradient angle α(t) may be assumed to be constant for a time, so that gradient angle α may not have to be estimated, calculated or measured by a cost-creating sensor.*

The Hayakawa reference *does not disclose or suggest that the gradient angle is assumed to be constant,* as provided for in the context of the presently claimed subject matter. (See Hayakawa, col. 6, lines 1-4). The Final Office Action (at page 2) asserts that "Hayakawa shows that the gradient angle change *is assumed to be very small* during a time interval, therefore the influence of the gradient *may be assumed to be constant* for a time". *However, assuming that the variation is very small is not the same as assuming that there is no variation (constant).* This is clear from the sections of Hayakawa cited at pages 2 and 3 of the Final Office Action, which asserts that (according to Hayakawa) for certain roads and speeds, frequency components related to a change in gradient are those of merely 2 Hz -- whereas the variation of the driving force contains components of 2 Hz or higher. Thus, in the Hayakawa device, a high-pass filter is required to remove the signal components below 2 Hz.

As explained above, if the gradient angle is assumed to be constant, as in the presently claimed subject matter, *the gradient angle would not have to be estimated, calculated or*

measured by a cost-creating sensor. In this regard, the high-pass filter of Hayakawa "measures" the variation in the gradient angle to determine if it is significant enough to include in the vehicle mass calculation. It is therefore respectfully submitted that assuming that there is a small gradient variation simply does not correspond to assuming that there is a constant gradient.

The Final Office Action also cites the text at col. 5, lines 5 to 15, of the Hayakawa reference. This text refers to an equilibrium relationship in which Θ *represents the change in the gradient.* Therefore, the Hayakawa reference does not disclose nor suggest an equilibrium relationship, as between a motive force and a sum of an inertial force and drive resistances, in which the mass and a gradient angle of a roadway are included as quantities, with respect to time, *assuming a constant gradient angle*, as provided for in the context of the claimed subject matter.

The Final Office Action (at pages 3 and 4) further asserts that "*If* a cutoff frequency greater than the frequency of the gradient variations is selected, such as 2 Hz, Θ is eliminated or minimized". As asserted, inherency concerns anticipation and not obviousness. In any event, to the extent that the Final Office Action may be relying on the inherency doctrine, it is respectfully submitted that to rely on inherency, the Office must provide a "basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristics necessarily flows from the teachings of the applied art." (See M.P.E.P. § 2112; emphasis in original; and see Ex parte Levy, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int'f. 1990)). *Thus, the M.P.E.P. and the case law make clear that simply because a certain result or characteristic* ***may occur*** *in the prior art does not establish the inherency of that result or characteristic*. In this regard, the Final Office Action specifically asserts that Θ is eliminated or minimized only "*If* a cutoff frequency greater than the frequency of the gradient variations is selected." Thus, Θ will not necessarily be eliminated or minimized, so that an equation containing Θ simply does not necessarily correspond to an equation without Θ as a variable.

Accordingly, the Hayakawa reference does not disclose nor suggest an equilibrium relationship, as between a motive force and a sum of an inertial force and drive resistances, assuming a constant gradient angle, as provided for in the context of the presently claimed subject matter.

Similarly, the Office Actions to date cite the text at col. 6, lines 26 to 41 of the Hayakawa reference, which refers to equation (5). According to the Final Office Action (at

page 4), this equation can be solved for m instantly by "neglecting e(k) in which case equation (5) is equivalent to the equation in claim 16". However, as explained above, this is not the same as assuming that the gradient is constant. (See col. 6, lines 37 to 39 of Hayakawa which refers to two separate possibilities: "In the case that the residual error e(k) is neglected"; and "In the case that the residual error e(k) is not negligible").

Thus, e(k) will not necessarily be eliminated, so that an equation containing e(k) *does not necessarily correspond* to an equation without e(k) as a variable. Therefore, the Final Office Action once again acknowledges that an element of the cited Hayakawa reference (equation (5)) is not necessarily like that of the presently claimed subject matter in which the gradient angle is assumed to be constant (equation of claim 16), and is in fact similar to the presently claimed subject matter *only if* e(k) is neglected, which is not necessarily the case because the assumption of a constant gradient is nowhere disclosed in the Hayakawa reference.

In short, the Final Office Action's conclusory assertion that it would somehow be obvious to solve the equation for instances where the variation in road gradient is negligible and can be ignored is wholly unsupported. In particular, *it does not correspond to assuming that the gradient angle of the road will be constant as in the context of the presently claimed subject matter*.

In the Advisory Action of August 20, 2009 at 11, it is conclusorily asserted that the assumption of a constant gradient somehow corresponds to the assumption of a small change in the gradient as in the Hayakawa reference. However, as explained at MPEP 2144.06, to rely on equivalence as a rationale supporting an obviousness rejection, it must be recognized in the prior art, and cannot be based on applicant's disclosure or the mere fact that the components at issue are functional or mechanical equivalents. In re Ruff, 256 F.2d 590, 118 USPQ 340 (CCPA 1958). None of the cited references disclose or suggest that an assumption of a small change of gradient angle is equivalent to an assumption of no change at all.

As to claim 24, it includes features like those of claim 13, and it is therefore allowable for essentially the same reasons as claim 13.

Accordingly, claims 13 and 24, are allowable, as are their respective dependent claims 14 to 17, 21, 22 and 25.

B. THE OBVIOUSNESS REJECTIONS OF CLAIMS 18 TO 20, 26, 27 & 29

Claims 18 to 20, 26, 27 and 29 were rejected under 35 U.S.C. § 103(a) as unpatentable over Hayakawa in view of Crapanzano and further in view of U.S. Patent No. 6,1647,357 to Zhu et al.

CLAIMS 18 TO 20, 26, 27 & 29

Claims 18 to 20 and 26 depend from claims 13 and 24 and they are therefore allowable for the same reasons, since Zhu does not cure – and is not asserted to cure -- the critical deficiencies of the Hayakawa reference.

C. THE OBVIOUSNESS REJECTION OF CLAIM 23

Claim 23 was rejected under 35 U.S.C. § 103(a) as unpatentable over Hayakawa in view of Crapanzano et al. and further in view of U.S. Patent No. 6,745,112 to Mori, "Floating-Point Computation Using a Microcontroller" by Randel et al., "Programming and Customizing the PIC Microcontroller" by Predko and U.S. Patent No. 6,567,734 to Bellinger et al.

CLAIM 23

Claim 23 depends from claim 13 and it is therefore allowable for the same reasons, since the added references do not cure – and are not asserted to cure -- the critical deficiencies of the Hayakawa reference.

Furthermore, contrary to the assertions in the Final Office Action, it is respectfully submitted that it would not have been obvious to calculate the reciprocal value of the mass in the Hayakawa reference. According to the Office Actions to date, the Randal and Predko references supposedly indicate that "in situations *where a value is repeatedly used as a divisor*, it is more efficient to determine the reciprocal value and use it as a multiplier". (See Office Action of September 15, 2008 at page 11 (emphasis added)). Since, however, *Hayakawa* ***does not involve calculations where the mass is repeatedly used as a divisor,*** *using a technique for reducing the computational load, by using the reciprocal value of the mass when repeatedly using mass as a divisor, is not an obvious choice for improving the overall operational efficiency of systems for estimating the mass of a vehicle such as in Hayakawa*. Accordingly, claim 23 is allowable for this further reason.

D. THE OBVIOUSNESS REJECTIONS OF CLAIMS 28 & 30

Claims 28 and 30 were rejected under 35 U.S.C. § 103(a) as unpatentable over Hayakawa in view of Crapanzano et al. and further in view of U.S. Patent No. 6,745,112 to Mori, "Floating-Point Computation Using a Microcontroller" by Randel et al., and "Programming and Customizing the PIC Microcontroller" by Predko.

CLAIMS 28 & 30

Claims 29 and 30 depend from claim 13, and they are therefore allowable for essentially the same reasons, since the secondary references do not cure – and are not asserted to cure – the critical deficiencies of the other applied references.

As further regards all of the obviousness rejections, the Examiner did not provide specific evidence to establish those assertions and/or contentions that may be supported by any Official Notices under 37 C.F.R. § 1.104(d)(2) or otherwise. In particular, the Examiner did not provide an affidavit and/or provide published information concerning these assertions. (See also MPEP § 2144.03).

Accordingly, claims 13 to 30 are allowable.

As further regards all of the obviousness rejections, it is respectfully submitted that the cases of In re Fine, supra, and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), make plain that the Office's generalized assertions that it would have been obvious to modify or combine the references do not properly support a § 103 rejection. It is respectfully submitted that those cases make plain that the Answer reflects a subjective "obvious to try" standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the references relied upon. In particular, the Court in the case of In re Fine stated that:

> The PTO has the burden under section 103 to establish a *prima facie* case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. This it has not done. . . .
>
> **Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . One cannot use hindsight**

> **reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1598 to 1600 (citations omitted; italics in original; emphasis added). Likewise, the Court in the case of In re Jones stated that:

> Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .
>
> **Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].**

In re Jones, 21 U.S.P.Q.2d at 1943, 1944 (citations omitted; italics in original).

That is exactly the case here since it is believed and respectfully submitted that the Office Actions to date offer no evidence whatsoever, but only conclusory hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence that will support a proper obviousness finding. Unsupported assertions are not evidence as to why a person having ordinary skill in the art would be motivated to modify or combine references to provide the claimed subject matter of the claims to address the problems met thereby. Accordingly, the Office must provide proper evidence of a motivation for modifying or combining the references to provide the claimed subject matter.

Also, the Federal Circuit in the case of In re Kotzab has made plain that even if a claim concerns a "technologically simple concept" — which is not the case here — there still must be some finding as to the "specific understanding or principle within the knowledge of a skilled artisan" that would motivate a person having no knowledge of the claimed subject matter to "make the combination in the manner claimed," stating that:

> In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a technologically simple concept. With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed limitation. But, there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab's invention to make the combination in the manner claimed. In light of our holding of the absence of a

> motivation to combine the teachings in Evans, we conclude that the Board did not make out a proper prima facie case of obviousness in rejecting [the] claims . . . under 35 U.S.C. Section 103(a) over Evans.

In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Fed. Cir. 2000) (emphasis added). Here again, there have been no such findings to establish that the features discussed above of the rejected claims are met by the reference relied upon. As referred to above, any review of the reference, whether taken alone or combined, makes plain that the reference simply does not describe the features discussed above of the rejected claims.

As still further regards all of the obviousness rejections of the claims, it is respectfully submitted that a proper *prima facie* case has not been made in the present case for obviousness, since the Office Actions to date never made any findings, such as, for example, regarding in any way whatsoever what a person having ordinary skill in the art would have been at the time the claimed subject matter of the present application was made. (See *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998) (the "factual predicates underlying" a *prima facie* "obviousness determination include the scope and content of the prior art, the differences between the prior art and the claimed invention, and the level of ordinary skill in the art")).

It is respectfully submitted that the proper test for showing obviousness is what the "combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art", and that the Patent Office must provide particular findings in this regard — the evidence for which does not include "broad conclusory statements standing alone". (See *In re Kotzab*, 55 U.S.P.Q. 2d 1313, 1317 (Fed. Cir. 2000) (citing *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1618 (Fed. Cir. 1999) (obviousness rejections reversed where no findings were made "concerning the identification of the relevant art", the "level of ordinary skill in the art" or "the nature of the problem to be solved"))). It is respectfully submitted that there has been no such showings by the Office Actions to date or by the Advisory Action.

In fact, the present lack of any of the required factual findings forces both Appellants and any Appeals Board to resort to unwarranted speculation to ascertain exactly what facts underly the present obviousness rejections. The law mandates that the allocation of the proof burdens requires that the Patent Office provide the factual basis for rejecting a patent application under 35 U.S.C. § 103. (See *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q.

785, 788 (Fed. Cir. 1984) (citing *In re Warner*, 379 F.2d 1011, 1016, 154 U.S.P.Q. 173, 177 (C.C.P.A. 1967))). In short, the Examiner bears the initial burden of presenting a proper prima facie unpatentability case — which has not been met in the present case. (See *In re Oetiker*, 977 F.2d 1443, 1445, 24, U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992)).

Accordingly, claims 13 to 30 are allowable, and the rejections should therefore be reversed.

CONCLUSION

In view of the above, it is respectfully requested that the rejections of the finally rejected claims 13 to 30 be reversed, and that these ~~claims be allowed as presented~~.

Respectfully submitted,

Dated: 11/5/2008

By: _____

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CLAIMS APPENDIX

1-12. (Canceled).

13. A method for effecting a computer-aided estimation of a mass of a vehicle, comprising:

computer-aided differentiating an equilibrium relationship, between a motive force and a sum of an inertial force and drive resistances, in which the mass and a gradient angle of a roadway are included as quantities, with respect to time, assuming a constant gradient angle; and

calculating at least one of (a) the mass of the vehicle and (b) a reciprocal value of the mass of the vehicle from the equilibrium relationship differentiated with respect to time in the differentiating step.

14. The method according to claim 13, wherein the vehicle includes a commercial vehicle.

15. The method according to claim 13, wherein the drive resistances include a sum of one of (a) an accelerative force and (b) a deceleration force as a function of the mass and one of (a) an uphill force and (b) a downhill force as a function of the gradient angle.

16. The method according to claim 15, wherein the mass is calculated from the equation:

$$m = \frac{dF/dt}{da/dt}$$, and

wherein a represents a time derivation of a longitudinal vehicle velocity and F represents the motive force of the vehicle.

17. The method according to claim 16, further comprising:

determining, from measured quantities, the motive force and the one of (a) the acceleration and (b) the deceleration.

18. The method according to claim 17, wherein the measured quantities are available in a control unit of the vehicle.

19. The method according to claim 18, further comprising:

filtering the measured quantities as a function of a signal quality.

20. The method according to claim 17, further comprising:

repeatedly measuring the measured quantities; and

weighting the measurements differently.

21. The method according to claim 13, wherein the computer-aided differentiating is performed continuously and recursively.

22. The method according to claim 21, wherein the computer-aided differentiating is performed one of (a) according to a two-point differentiation and (b) with a state-variable filter.

23. The method according to claim 13, the method further comprising:

forming a weighted average value, wherein the calculating step includes calculating both the mass and a reciprocal value of the mass.

24. A device for effecting a computer-aided estimation of a mass of a vehicle, comprising:

a calculation unit adapted to calculate at least one of (a) the mass of the vehicle and (b) a reciprocal value of the mass of the vehicle from an equilibrium relationship between a motive force and a sum of an inertial force and drive resistances, the mass and a gradient angle of a roadway included as calculation quantities, after a computer-aided differentiation of the equilibrium relationship with respect to time, assuming a constant gradient angle.

25. The device according to claim 24, wherein the vehicle includes a commercial vehicle.

26. The device according to claim 24, wherein the calculation unit is integrated into a control unit of the vehicle.

27. The device according to claim 24, wherein:

from measured quantities, the motive force and the one of (a) the acceleration and (b) the deceleration are determined,

the measured quantities are repeatedly measured, and the measurements are weighted differently,

the measured quantities are filtered as a function of a signal quality,

the drive resistances include a sum of one of (a) an accelerative force and (b) a deceleration force as a function of the mass and one of (a) an uphill force and (b) a downhill force as a function of the gradient angle, wherein the mass is calculated from the equation of $m = \frac{dF/dt}{da/dt}$, and a represents a time derivation of a longitudinal vehicle velocity and F represents the motive force of the vehicle, and

the measured quantities are available in a control unit of the vehicle.

28. The device according to claim 24, wherein the computer-aided differentiating is performed continuously and recursively, wherein the computer-aided differentiating is performed one of (a) according to a two-point differentiation and (b) with a state-variable filter, and wherein the calculating includes calculating the mass and a reciprocal value of the mass.

29. The method according to claim 13, further comprising:

determining, from measured quantities, the motive force and the one of (a) the acceleration and (b) the deceleration;

repeatedly measuring the measured quantities, and weighting the measurements differently; and

filtering the measured quantities as a function of a signal quality;

wherein the drive resistances include a sum of one of (a) an accelerative force and (b) a deceleration force as a function of the mass and one of (a) an uphill force and (b) a downhill force as a function of the gradient angle, wherein the mass is calculated from the equation of $m = \frac{dF/dt}{da/dt}$, and a represents a time derivation of a longitudinal vehicle velocity and F represents the motive force of the vehicle, wherein the measured quantities are available in a control unit of the vehicle.

30. The method according to claim 13, wherein the computer-aided differentiating is performed continuously and recursively, wherein the computer-aided differentiating is performed one of (a) according to a two-point differentiation and (b) with a state-variable filter, and wherein the calculating includes calculating the mass and a reciprocal value of the mass.

EVIDENCE APPENDIX

Appellants have not submitted any evidence pursuant to 37 CFR Sections 1.130, 1.131 or 1.132, and do not rely upon evidence entered by the Examiner.

RELATED PROCEEDINGS INDEX

There are no interferences or other appeals related to the present application.